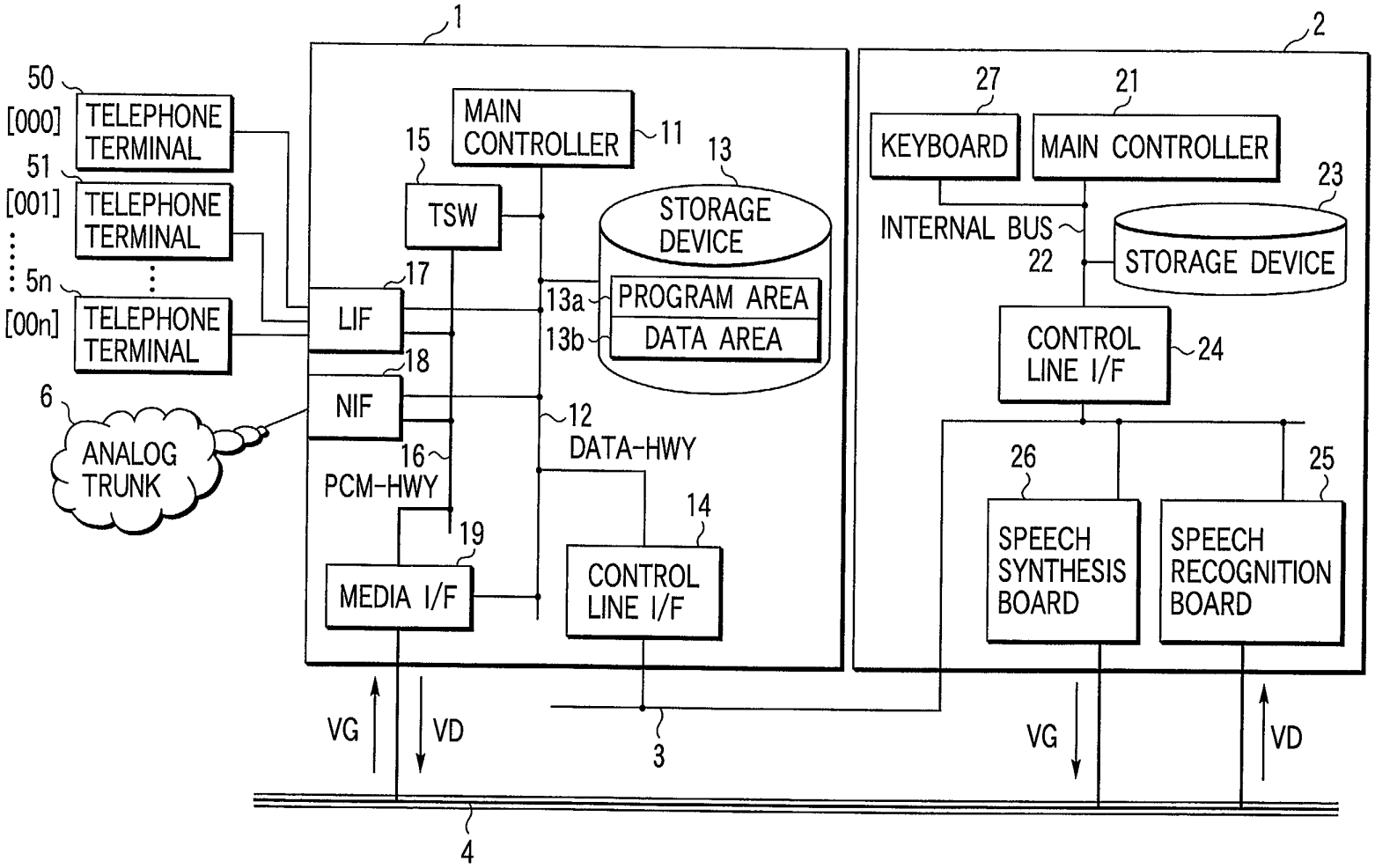
1
2
50
[000]
TELEPHONE TERMINAL
51
[001]
TELEPHONE TERMINAL
5n
[00n]
TELEPHONE TERMINAL
6
ANALOG TRUNK
LIF
17
NIF
18
PCM-HWY
16
MAIN CONTROLLER
11
15
TSW
13
STORAGE DEVICE
13a
PROGRAM AREA
13b
DATA AREA
12
DATA-HWY
14
CONTROL LINE I/F
19
MEDIA I/F
VG
VD
3
4
27
KEYBOARD
21
MAIN CONTROLLER
23
INTERNAL BUS
22
STORAGE DEVICE
CONTROL LINE I/F
24
26
SPEECH SYNTHESIS BOARD
25
SPEECH RECOGNITION BOARD
VG
VD

FIG. 1

NAME	EXTENSION NUMBER
YAMAMOTO	5621
SASAKI	5625

FIG. 2

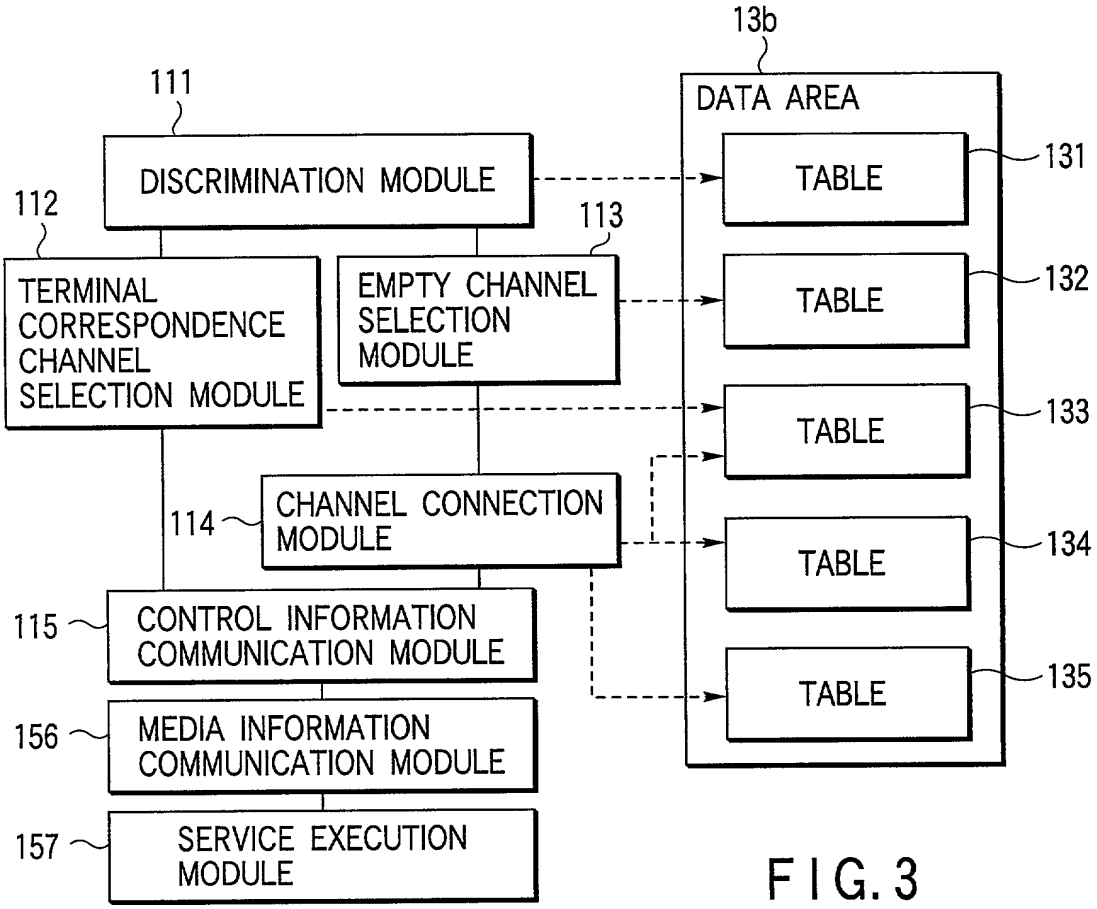

FIG. 3

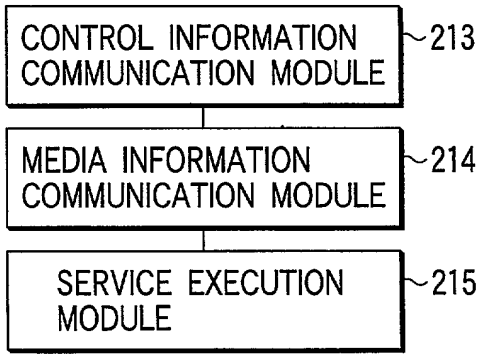

FIG. 4

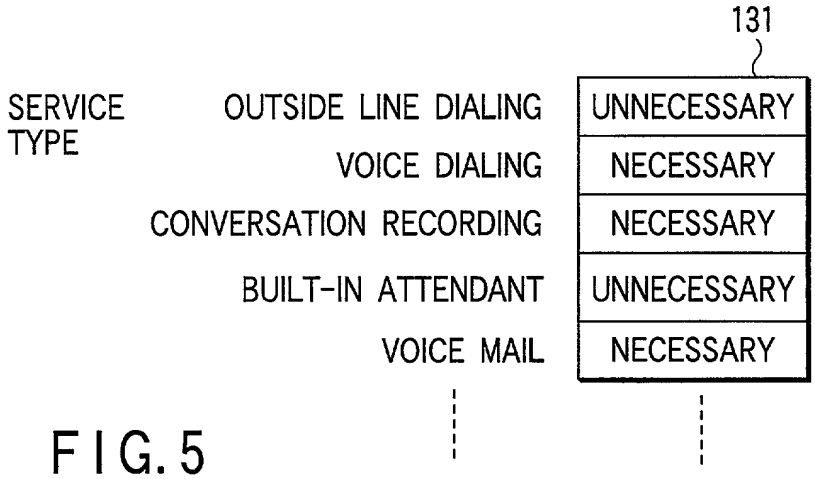

FIG. 5

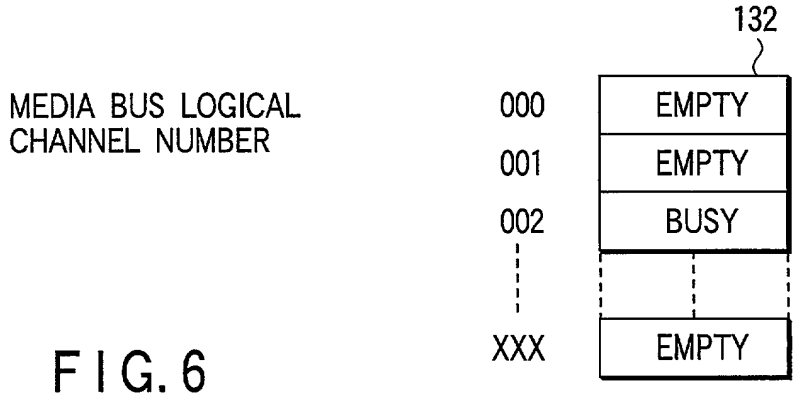

FIG. 6

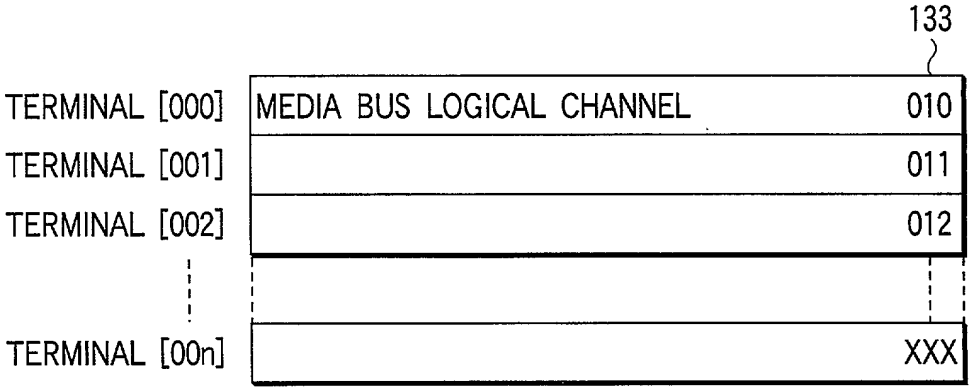

FIG. 7

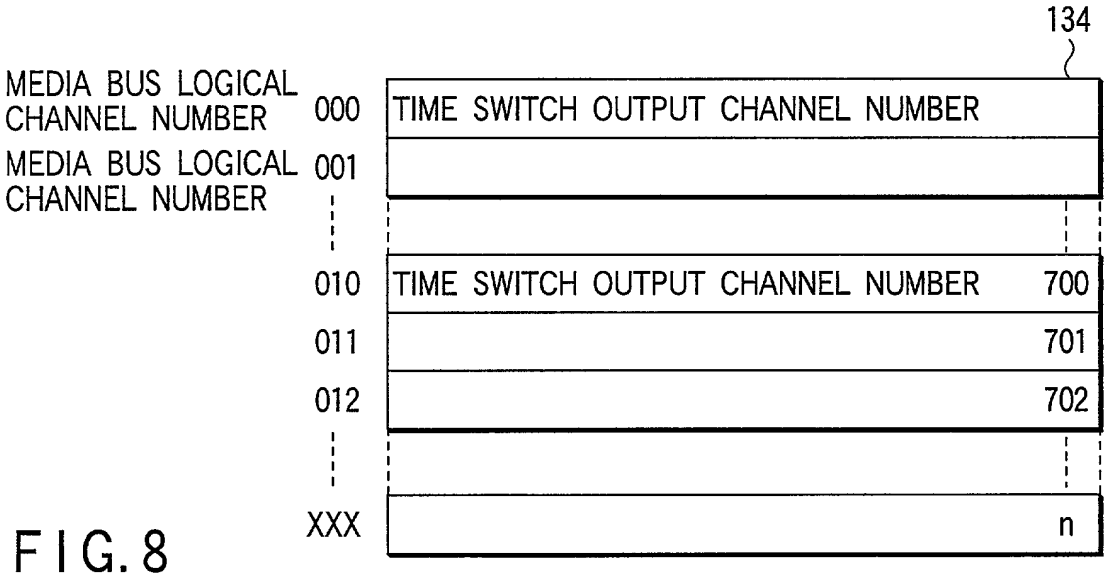

FIG. 8

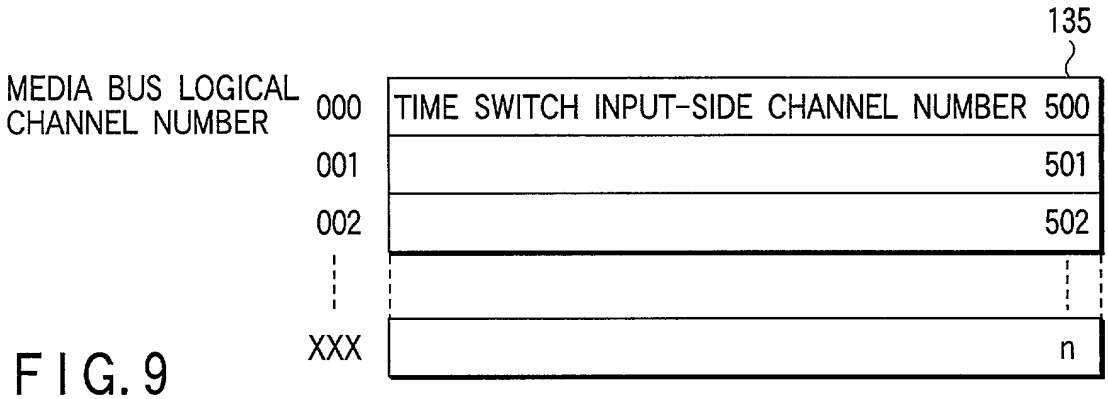

FIG. 9

PUB-NO: JP405327826A

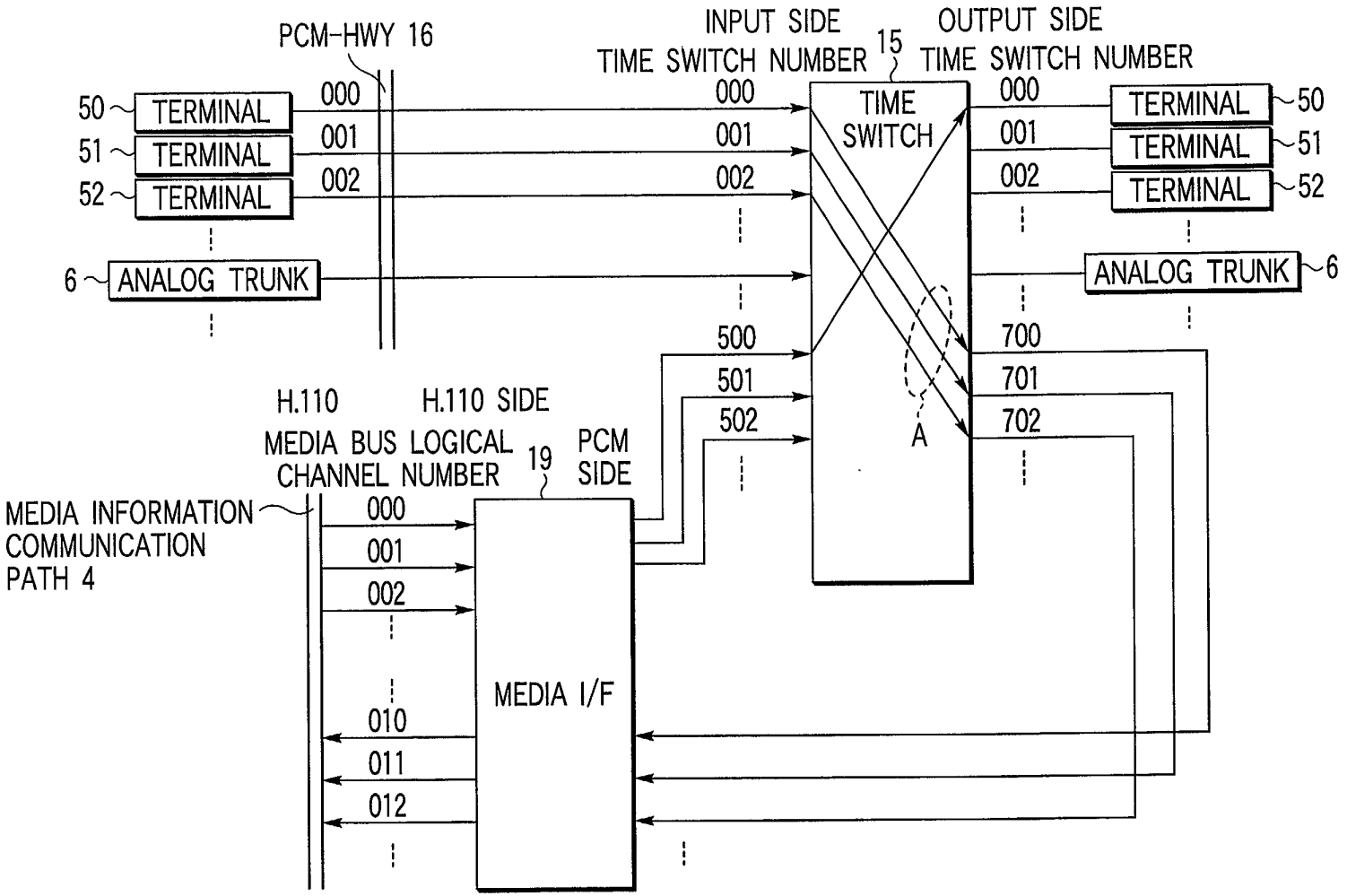

FIG. 10

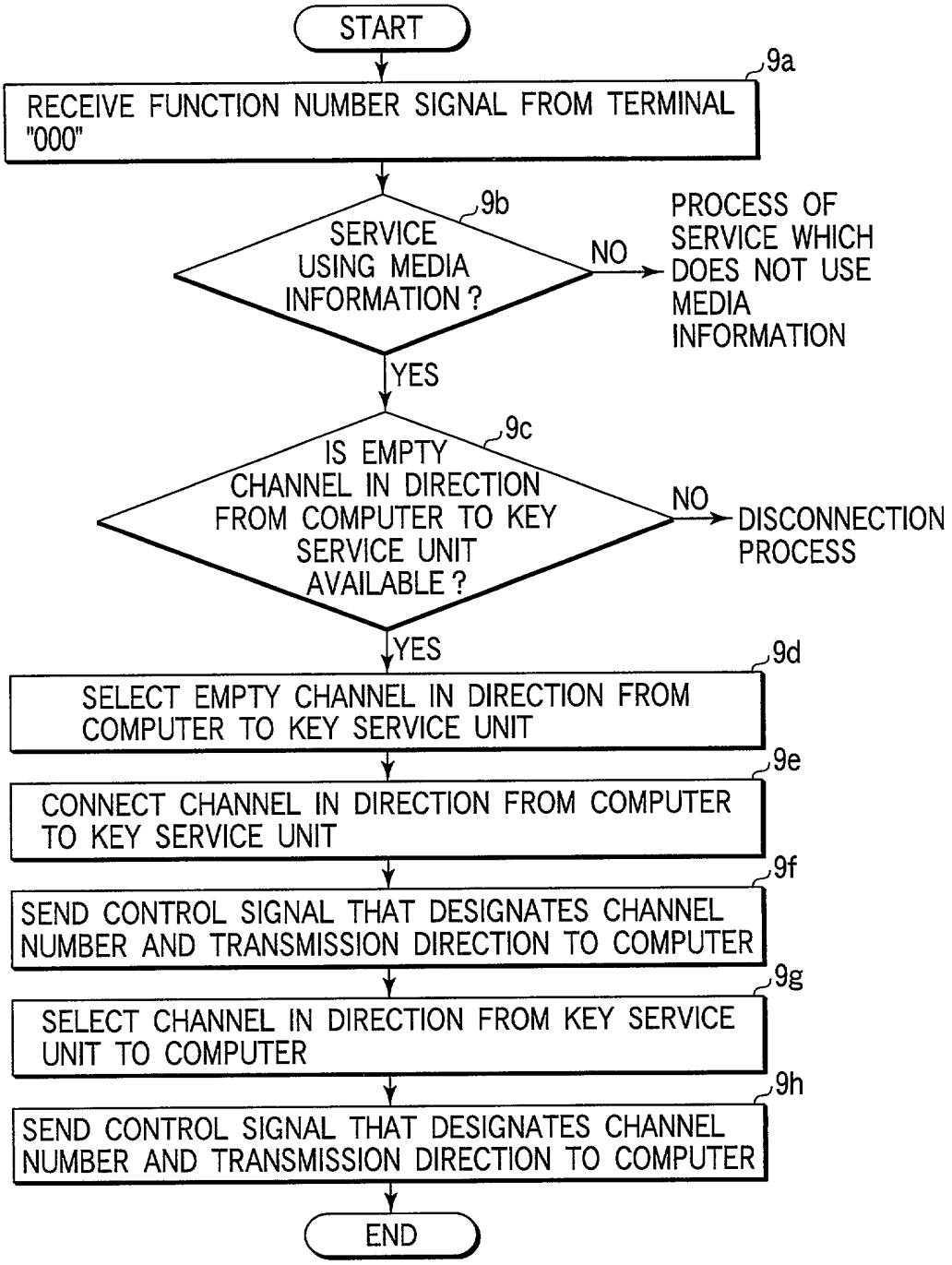
START
9a
RECEIVE FUNCTION NUMBER SIGNAL FROM TERMINAL "000"
9b
SERVICE USING MEDIA INFORMATION ?
NO
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
YES
9c
IS EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT AVAILABLE ?
NO
DISCONNECTION PROCESS
YES
9d
SELECT EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
9e
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
9f
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
9g
SELECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
9h
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
END

FIG. 11

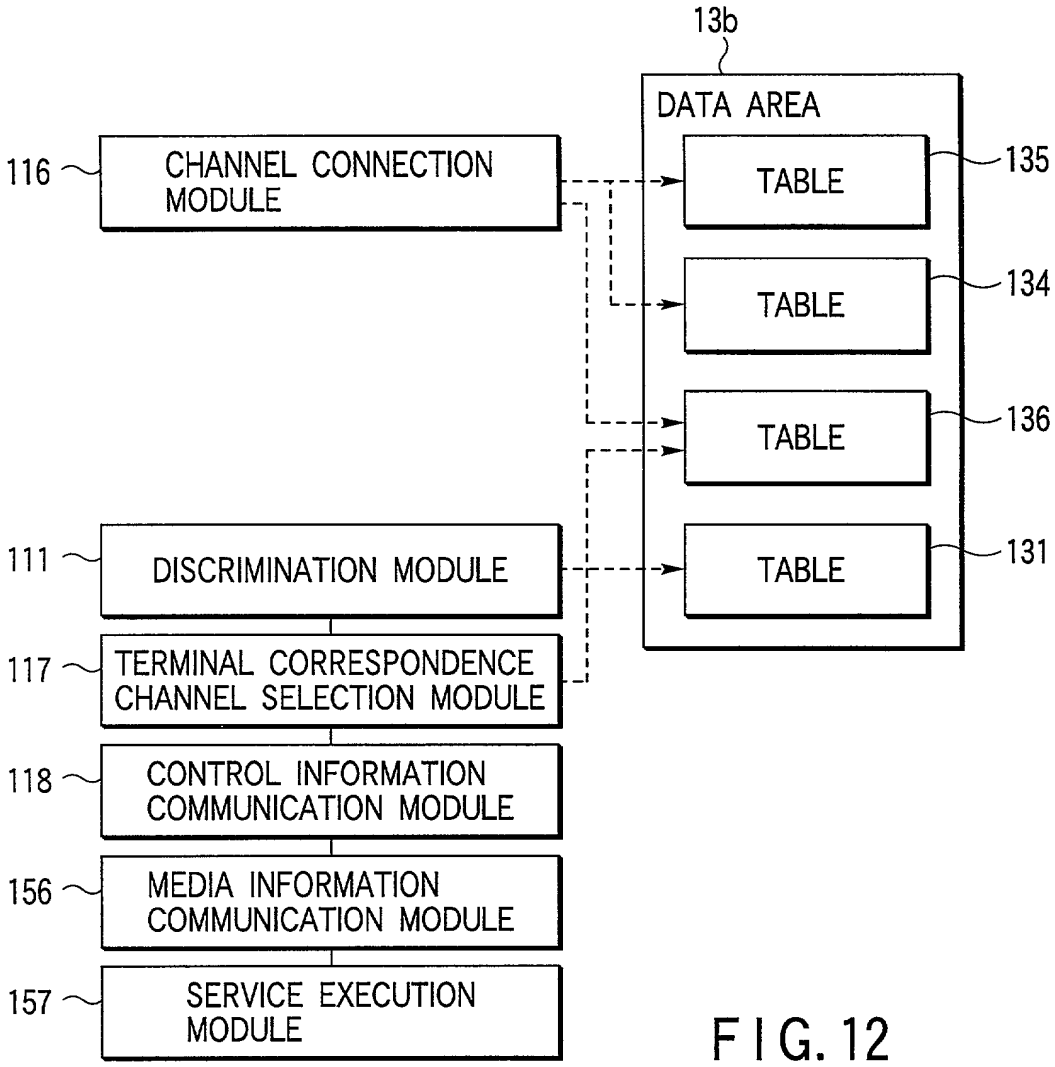
13b
DATA AREA
116
CHANNEL CONNECTION MODULE
TABLE
135
TABLE
134
TABLE
136
TABLE
131
111
DISCRIMINATION MODULE
117
TERMINAL CORRESPONDENCE CHANNEL SELECTION MODULE
118
CONTROL INFORMATION COMMUNICATION MODULE
156
MEDIA INFORMATION COMMUNICATION MODULE
157
SERVICE EXECUTION MODULE

FIG. 12

PATENT APPLICATION

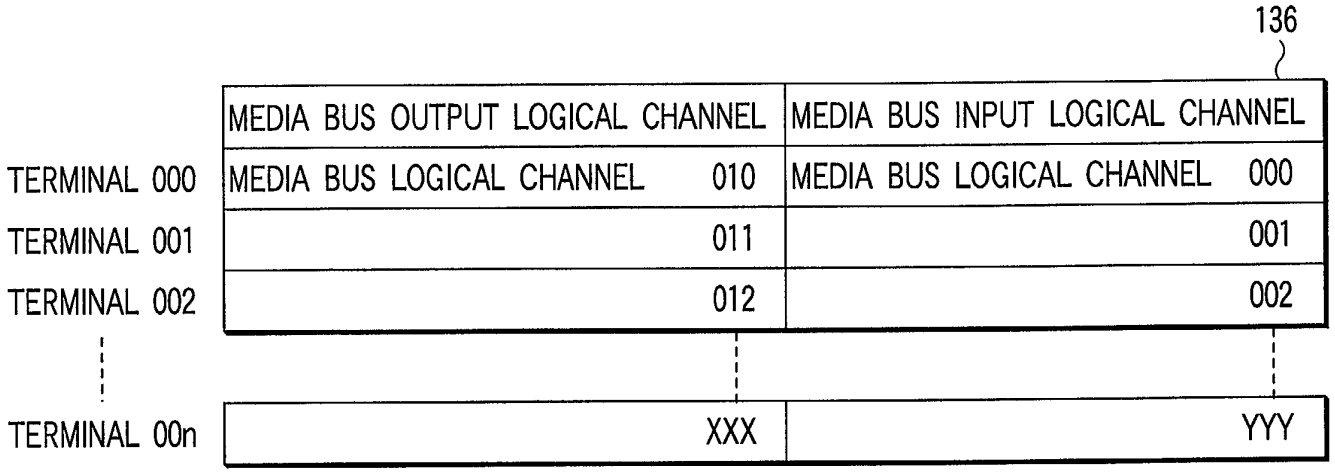

FIG. 13

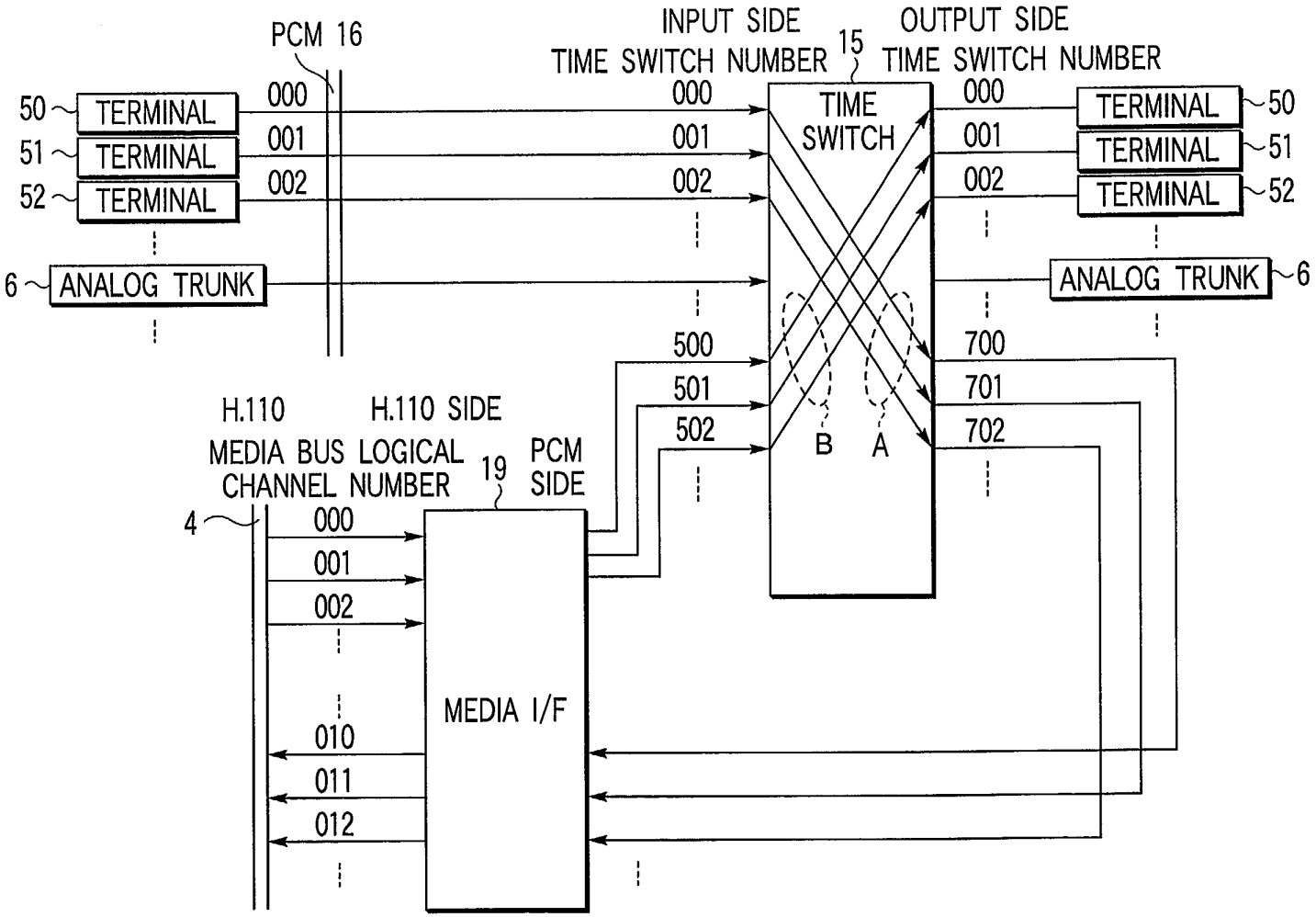
PCM 16
INPUT SIDE
TIME SWITCH NUMBER
15
OUTPUT SIDE
TIME SWITCH NUMBER
50
TERMINAL
51
TERMINAL
52
TERMINAL
6
ANALOG TRUNK
000
001
002
TIME
SWITCH
B
A
500
501
502
700
701
702
H.110
MEDIA BUS LOGICAL
CHANNEL NUMBER
4
H.110 SIDE
PCM
SIDE
19
MEDIA I/F
010
011
012

FIG. 14

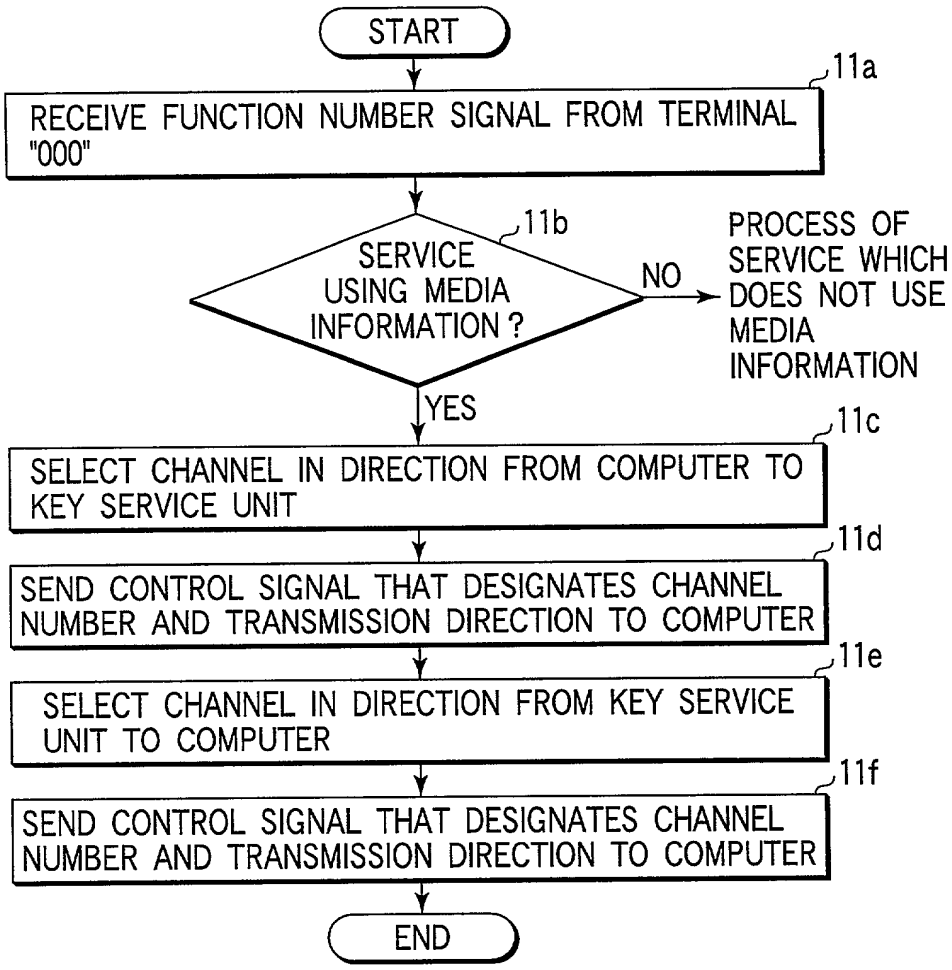
START
11a
RECEIVE FUNCTION NUMBER SIGNAL FROM TERMINAL "000"
11b
SERVICE USING MEDIA INFORMATION ?
NO
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
YES
11c
SELECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
11d
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
11e
SELECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
11f
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
END

FIG. 15

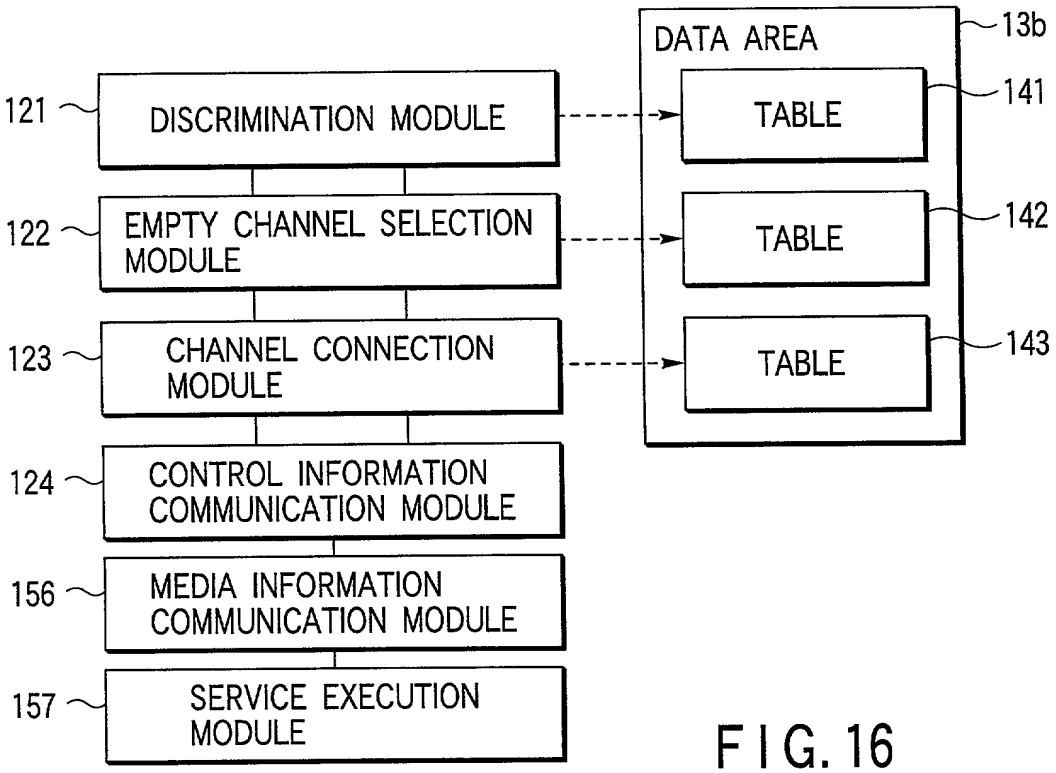
DATA AREA
13b
121
DISCRIMINATION MODULE
TABLE
141
122
EMPTY CHANNEL SELECTION MODULE
TABLE
142
123
CHANNEL CONNECTION MODULE
TABLE
143
124
CONTROL INFORMATION COMMUNICATION MODULE
156
MEDIA INFORMATION COMMUNICATION MODULE
157
SERVICE EXECUTION MODULE

FIG. 16

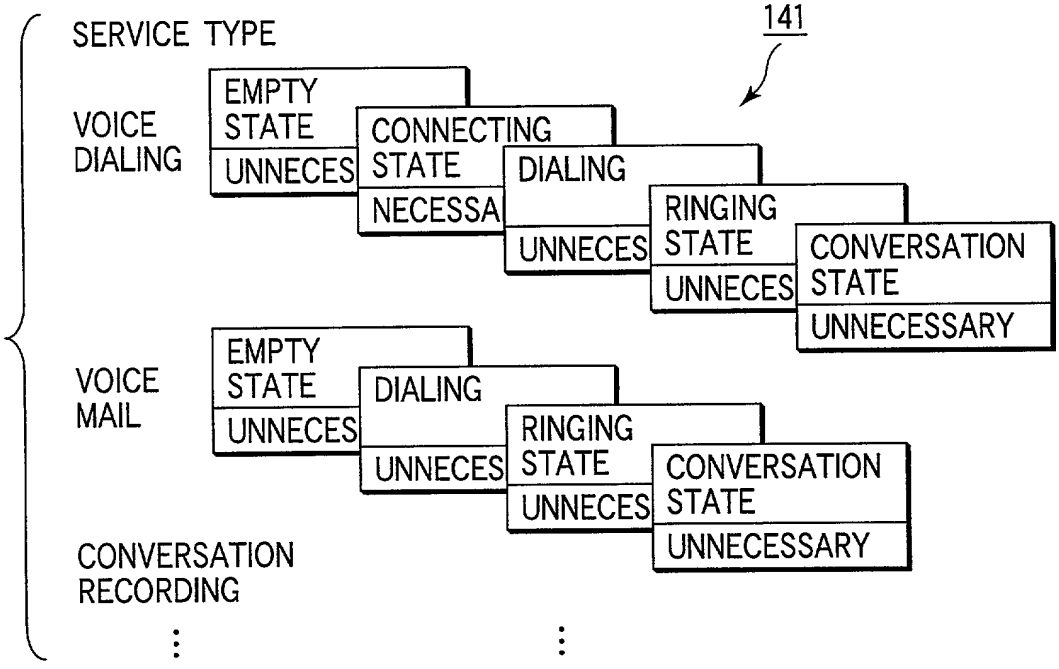
SERVICE TYPE
141
VOICE DIALING
EMPTY STATE
UNNECES
CONNECTING STATE
NECESSA
DIALING
UNNECES
RINGING STATE
UNNECES
CONVERSATION STATE
UNNECESSARY
VOICE MAIL
EMPTY STATE
UNNECES
DIALING
UNNECES
RINGING STATE
UNNECES
CONVERSATION STATE
UNNECESSARY
CONVERSATION RECORDING

FIG. 17

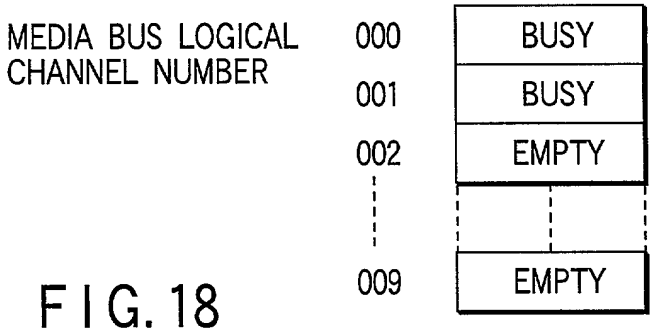

FIG. 18

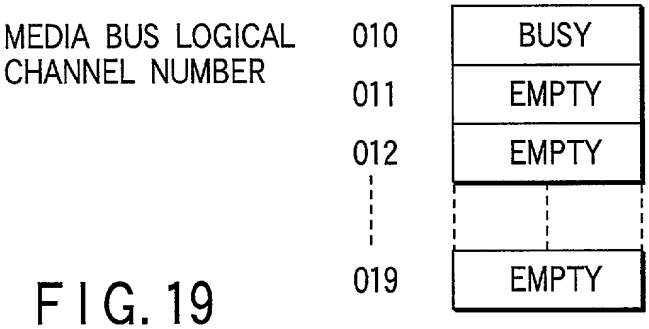

FIG. 19

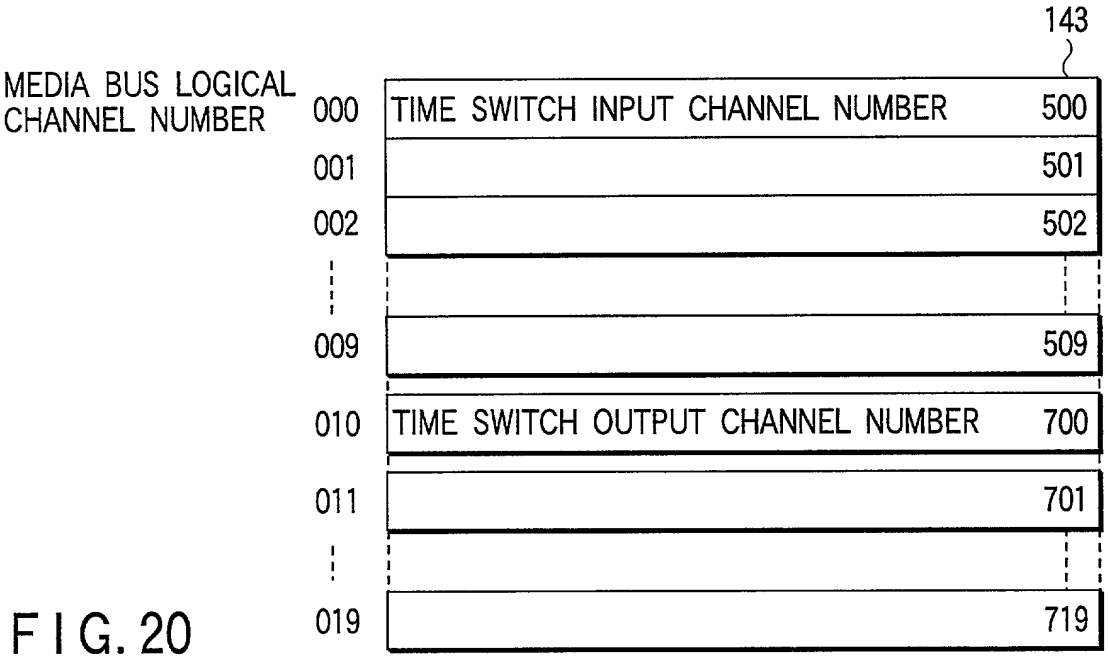

FIG. 20

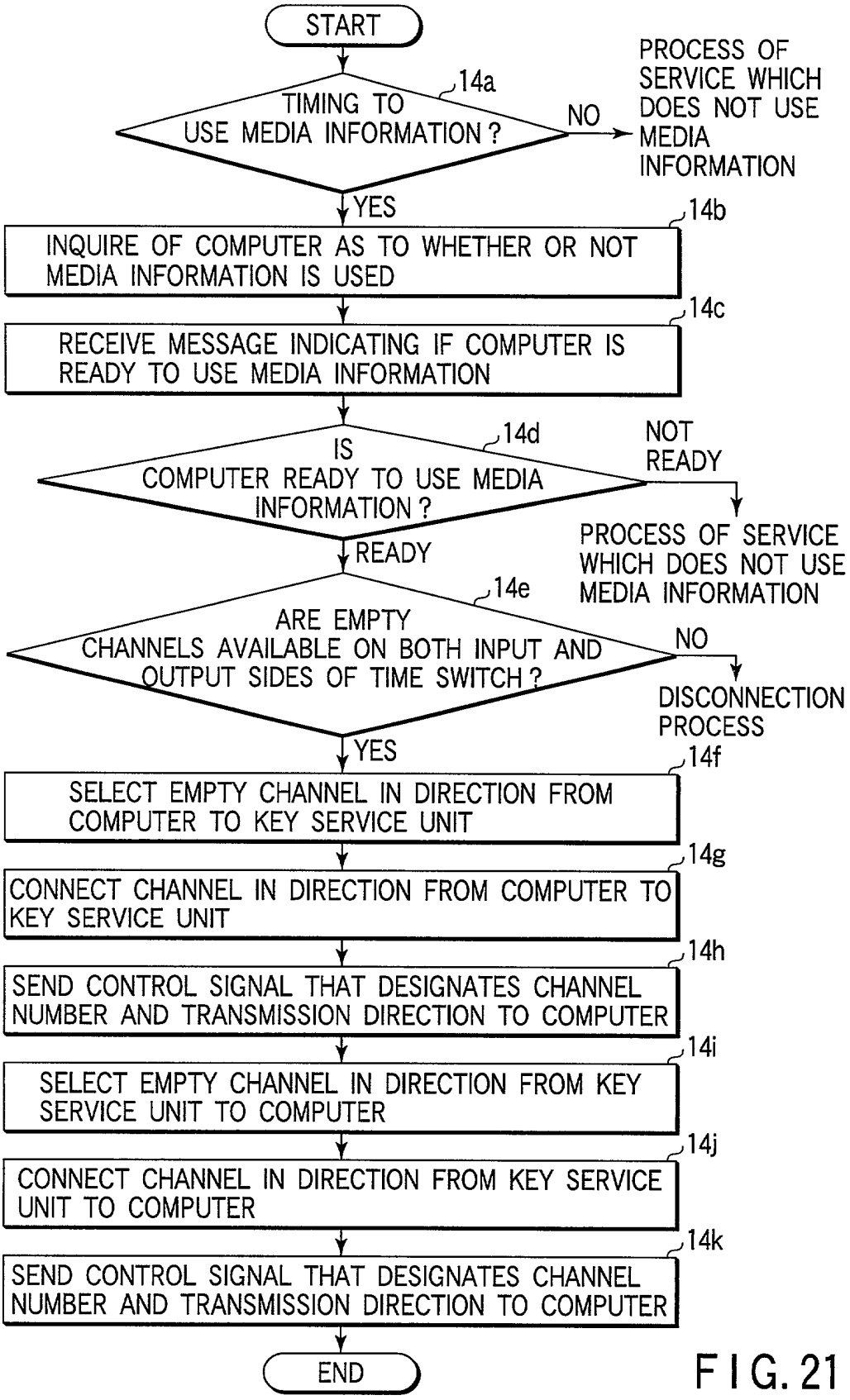
START
14a
TIMING TO USE MEDIA INFORMATION ?
NO
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
YES
14b
INQUIRE OF COMPUTER AS TO WHETHER OR NOT MEDIA INFORMATION IS USED
14c
RECEIVE MESSAGE INDICATING IF COMPUTER IS READY TO USE MEDIA INFORMATION
14d
IS COMPUTER READY TO USE MEDIA INFORMATION ?
NOT READY
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
READY
14e
ARE EMPTY CHANNELS AVAILABLE ON BOTH INPUT AND OUTPUT SIDES OF TIME SWITCH ?
NO
DISCONNECTION PROCESS
YES
14f
SELECT EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
14g
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
14h
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
14i
SELECT EMPTY CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
14j
CONNECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
14k
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
END

FIG. 21

PATENT-PATENT

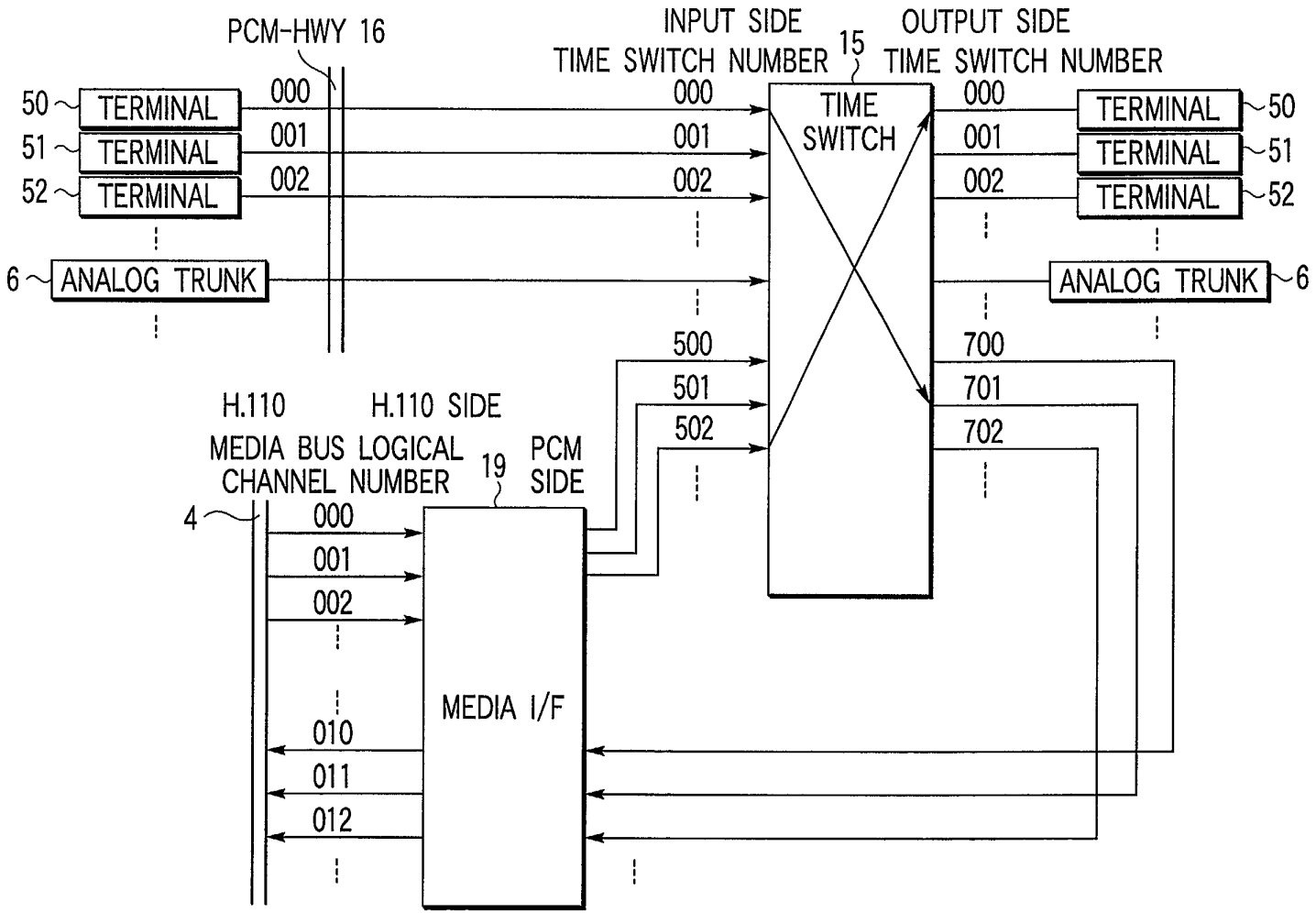

FIG. 22

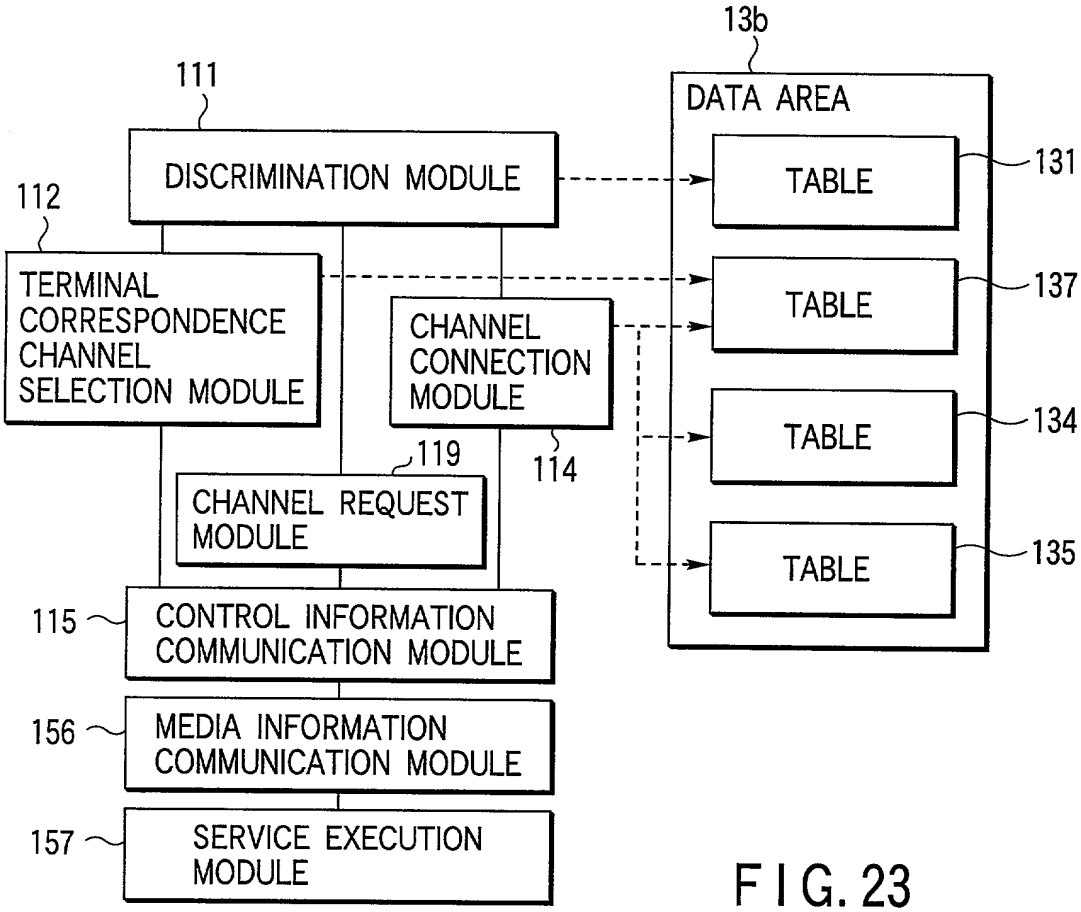
13b
DATA AREA
111
DISCRIMINATION MODULE
112
TERMINAL CORRESPONDENCE CHANNEL SELECTION MODULE
CHANNEL CONNECTION MODULE
114
119
CHANNEL REQUEST MODULE
115
CONTROL INFORMATION COMMUNICATION MODULE
156
MEDIA INFORMATION COMMUNICATION MODULE
157
SERVICE EXECUTION MODULE
TABLE
131
TABLE
137
TABLE
134
TABLE
135

FIG. 23

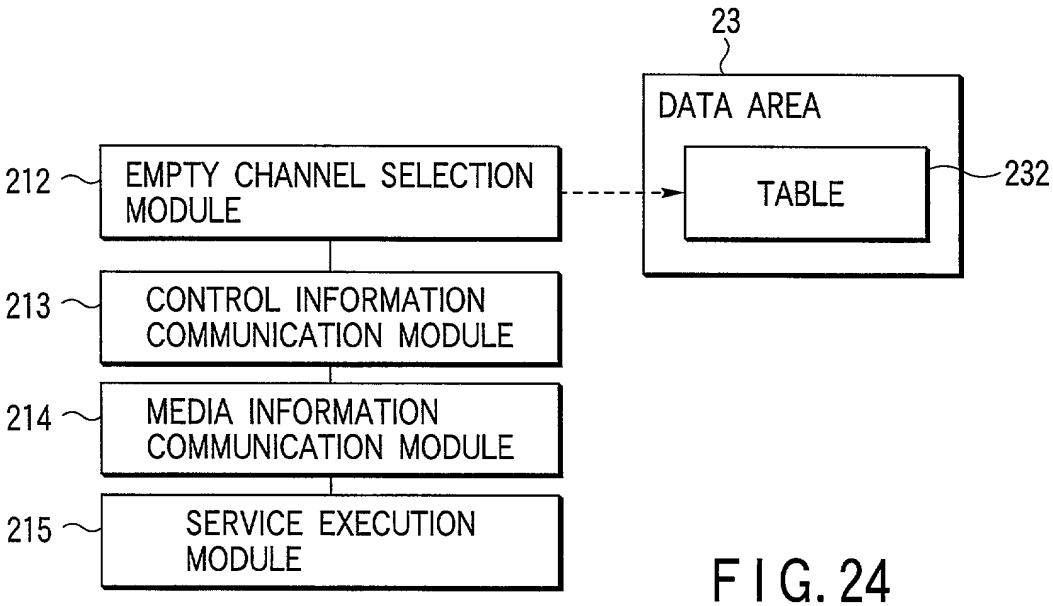

FIG. 24

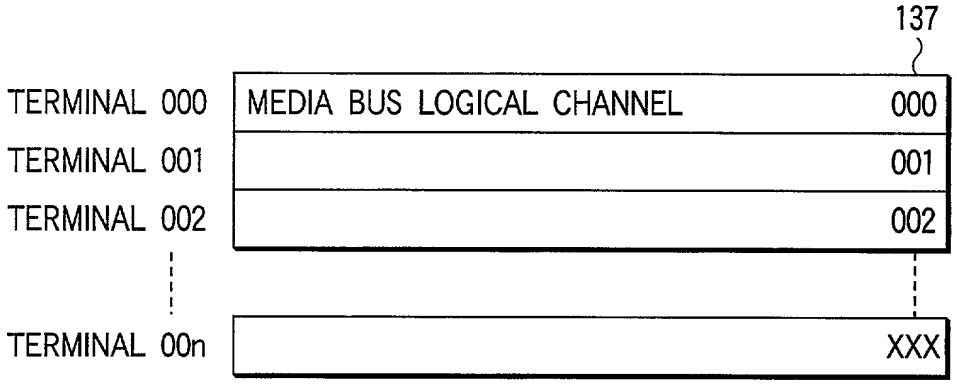

FIG. 25

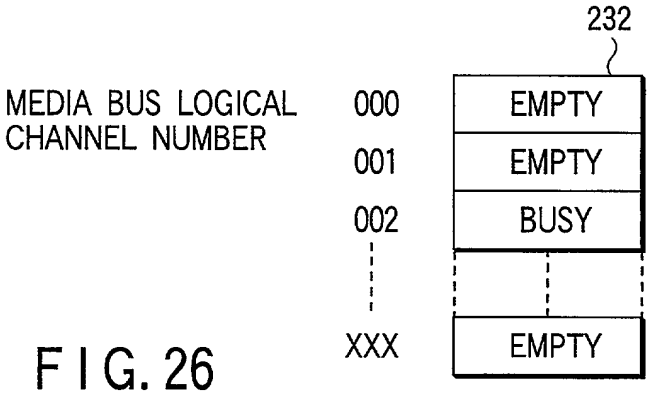

FIG. 26

EP 0 823 820 A2

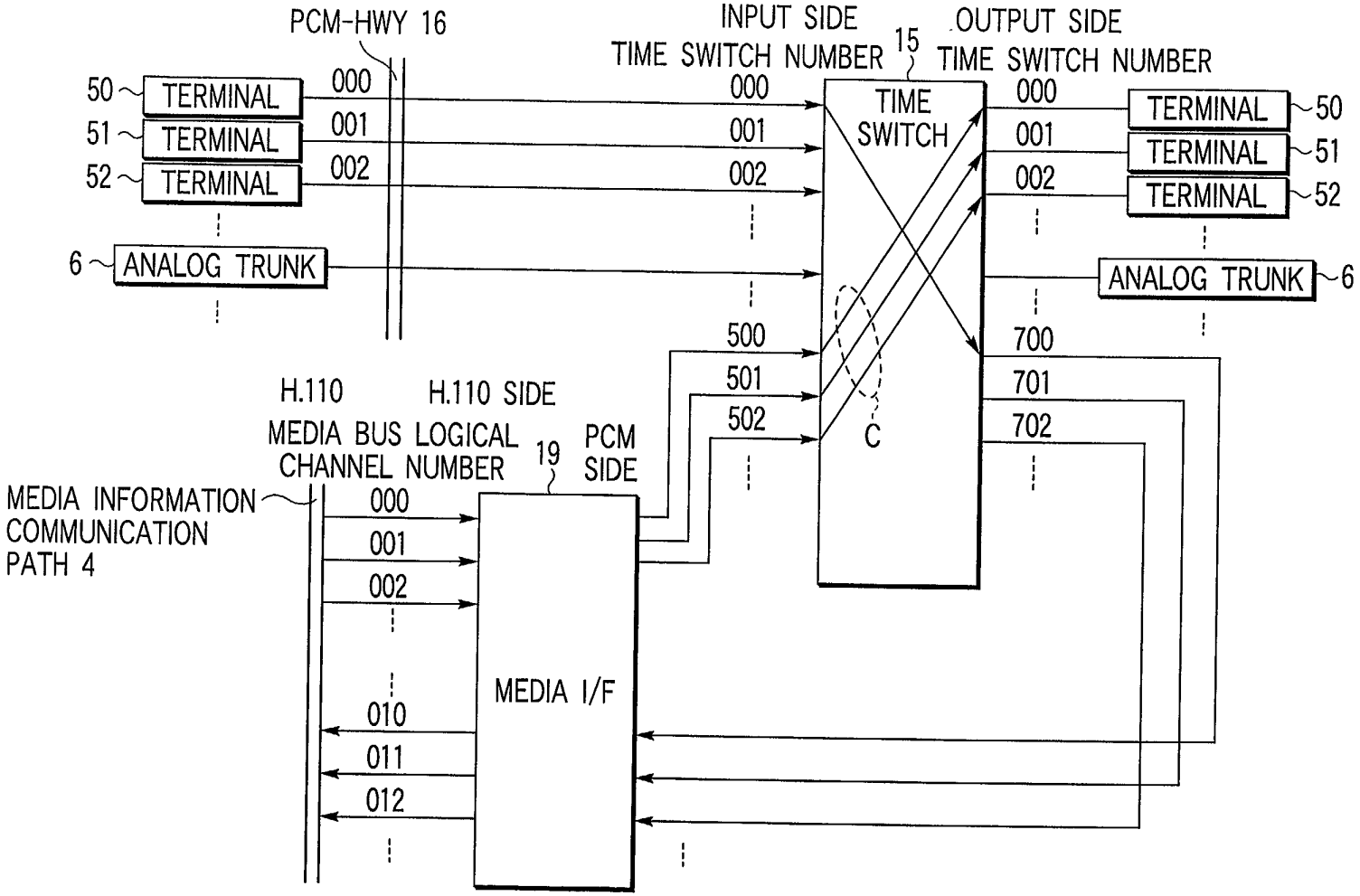

FIG. 27

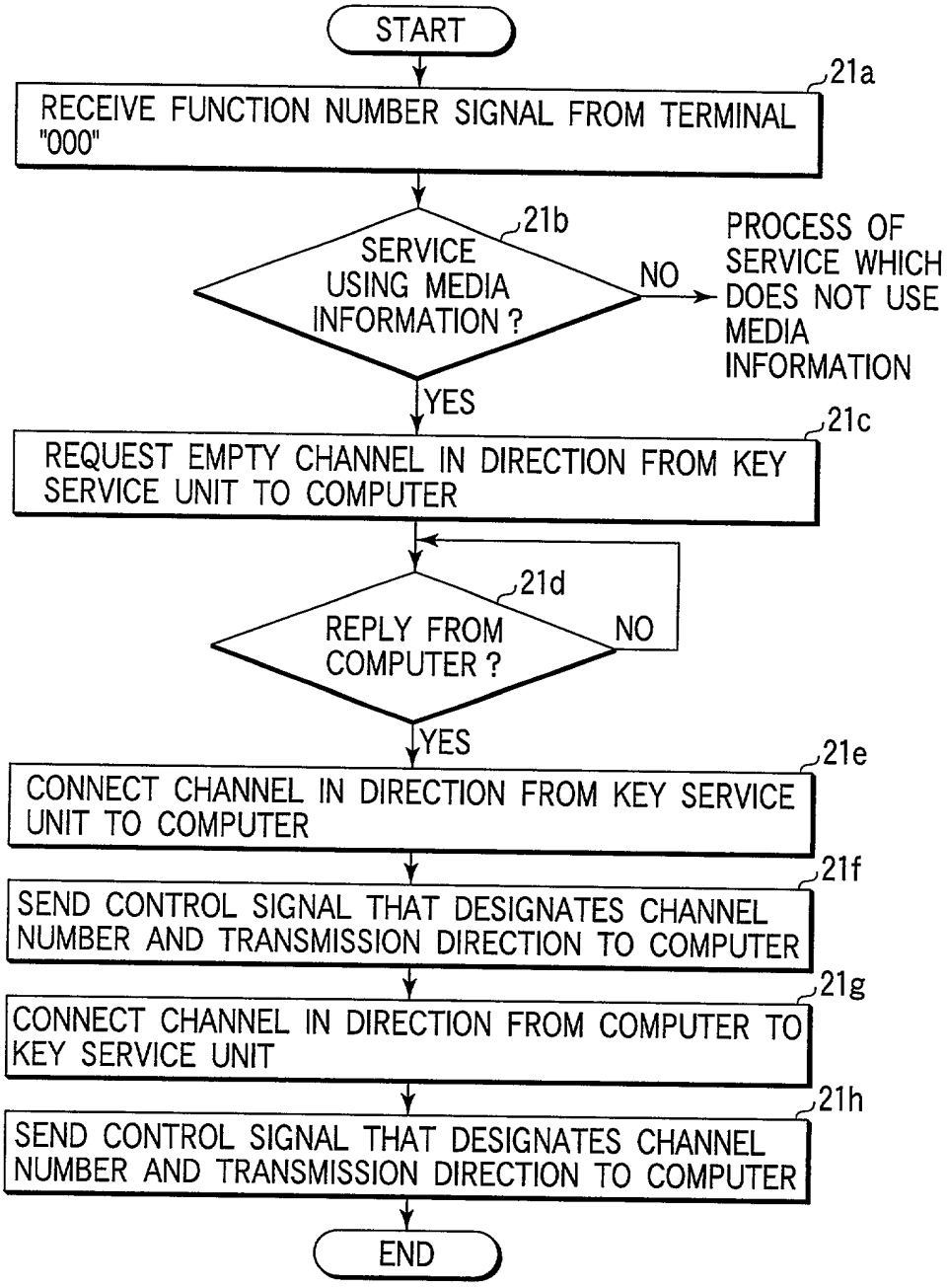
START
RECEIVE FUNCTION NUMBER SIGNAL FROM TERMINAL "000"
21a
SERVICE USING MEDIA INFORMATION ?
21b
NO
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
YES
REQUEST EMPTY CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
21c
REPLY FROM COMPUTER ?
21d
NO
YES
CONNECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
21e
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
21f
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
21g
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
21h
END

FIG. 28

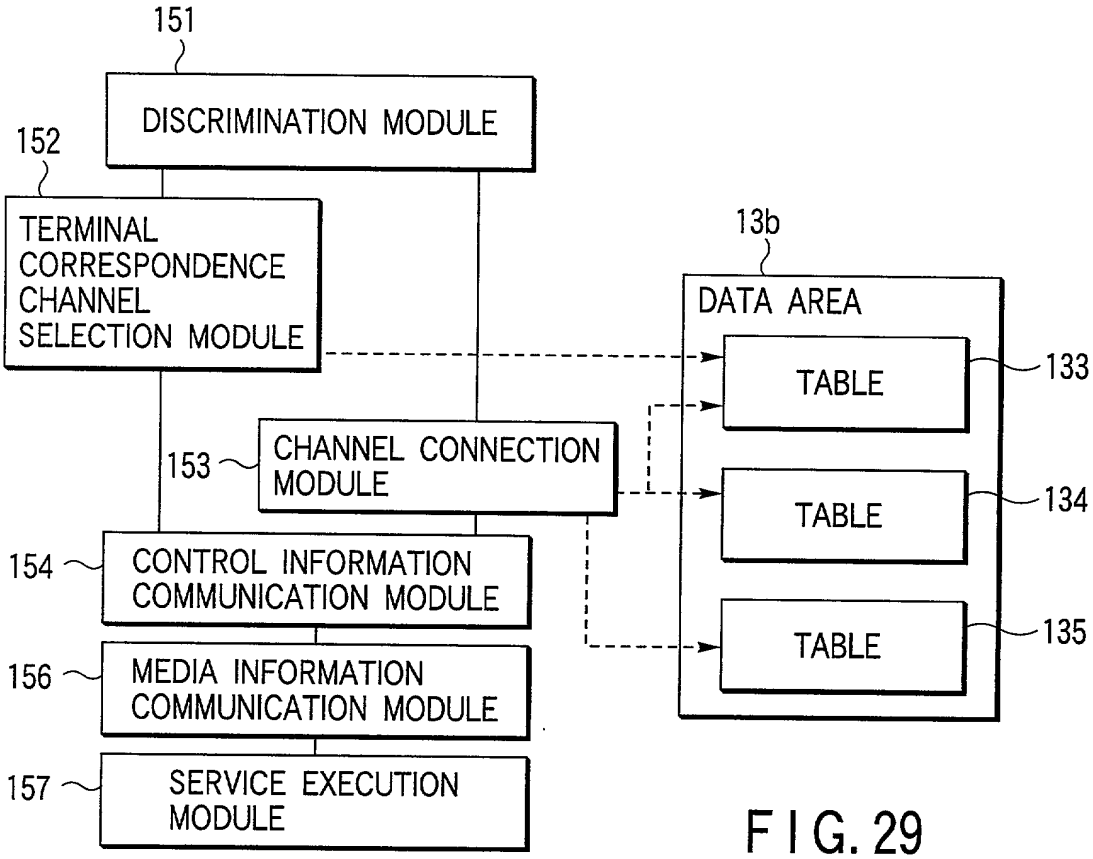
151
DISCRIMINATION MODULE
152
TERMINAL CORRESPONDENCE CHANNEL SELECTION MODULE
13b
DATA AREA
TABLE
133
153
CHANNEL CONNECTION MODULE
TABLE
134
154
CONTROL INFORMATION COMMUNICATION MODULE
TABLE
135
156
MEDIA INFORMATION COMMUNICATION MODULE
157
SERVICE EXECUTION MODULE

FIG. 29

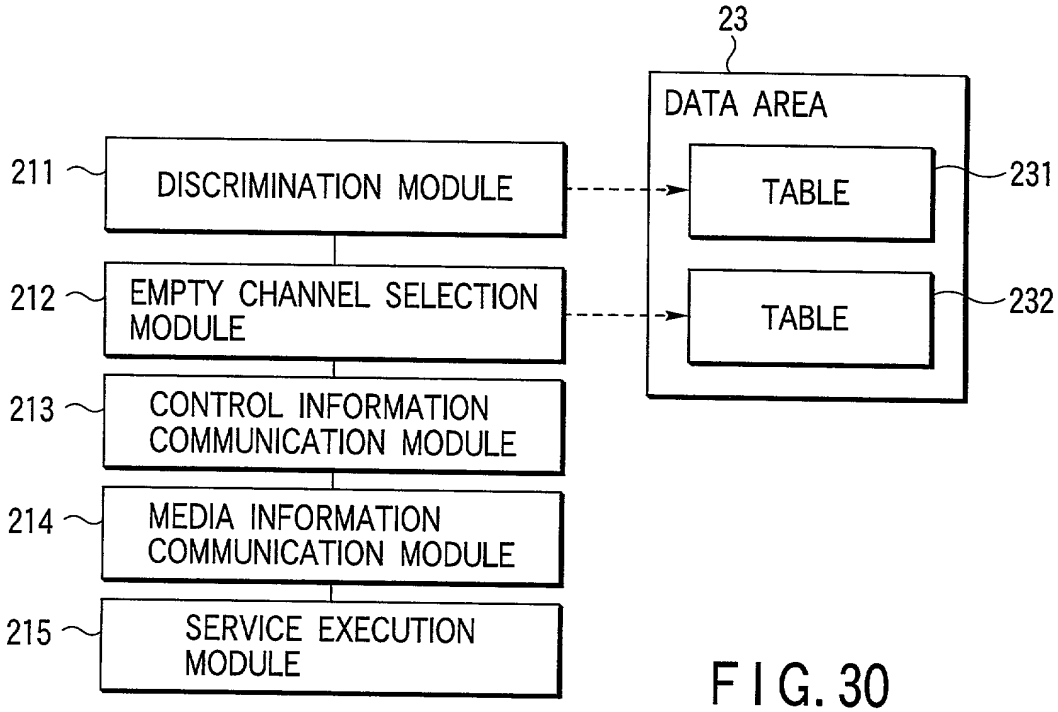
23
DATA AREA
211
DISCRIMINATION MODULE
TABLE
231
212
EMPTY CHANNEL SELECTION MODULE
TABLE
232
213
CONTROL INFORMATION COMMUNICATION MODULE
214
MEDIA INFORMATION COMMUNICATION MODULE
215
SERVICE EXECUTION MODULE

FIG. 30

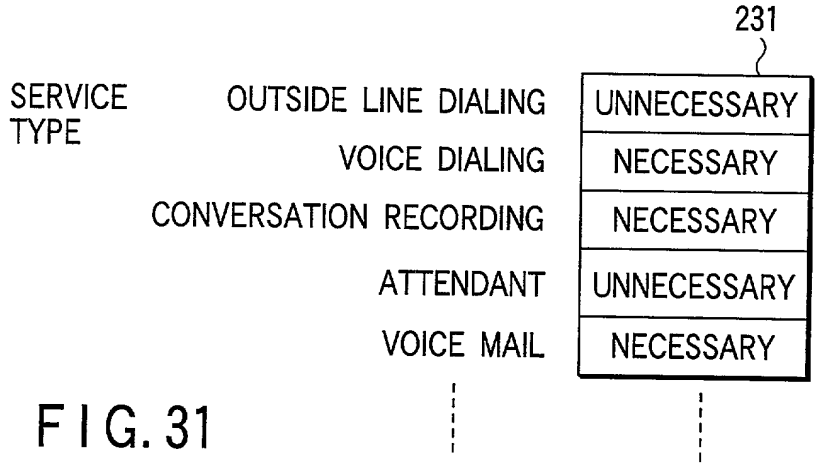
231
SERVICE TYPE
OUTSIDE LINE DIALING
UNNECESSARY
VOICE DIALING
NECESSARY
CONVERSATION RECORDING
NECESSARY
ATTENDANT
UNNECESSARY
VOICE MAIL
NECESSARY

FIG. 31

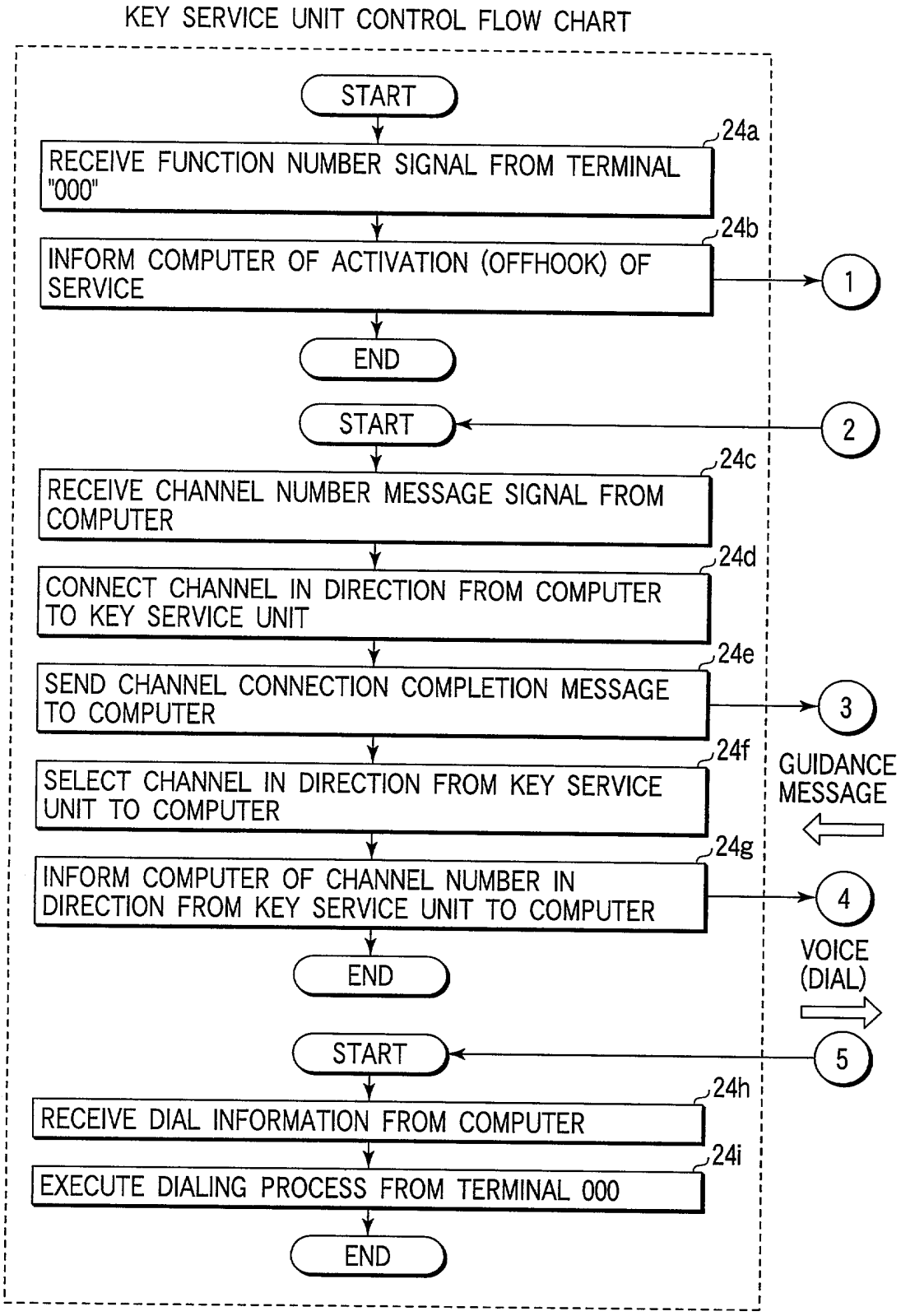
KEY SERVICE UNIT CONTROL FLOW CHART
START
24a
RECEIVE FUNCTION NUMBER SIGNAL FROM TERMINAL "000"
24b
INFORM COMPUTER OF ACTIVATION (OFFHOOK) OF SERVICE
1
END
START
2
24c
RECEIVE CHANNEL NUMBER MESSAGE SIGNAL FROM COMPUTER
24d
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
24e
SEND CHANNEL CONNECTION COMPLETION MESSAGE TO COMPUTER
3
GUIDANCE MESSAGE
24f
SELECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
24g
INFORM COMPUTER OF CHANNEL NUMBER IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
4
VOICE (DIAL)
END
START
5
24h
RECEIVE DIAL INFORMATION FROM COMPUTER
24i
EXECUTE DIALING PROCESS FROM TERMINAL 000
END

FIG. 32A

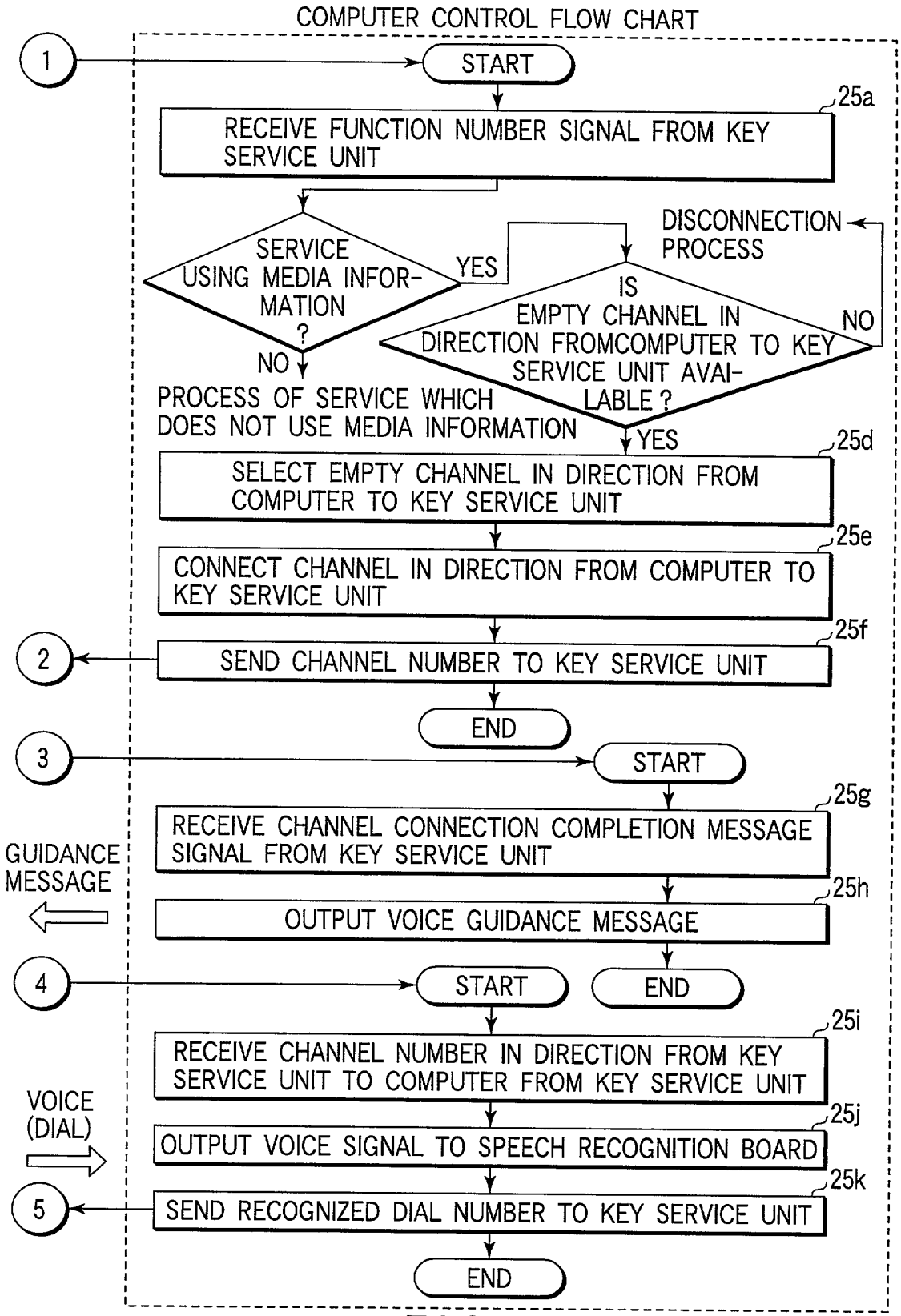
COMPUTER CONTROL FLOW CHART
1
START
25a
RECEIVE FUNCTION NUMBER SIGNAL FROM KEY SERVICE UNIT
SERVICE USING MEDIA INFORMATION ?
YES
NO
DISCONNECTION PROCESS
IS EMPTY CHANNEL IN DIRECTION FROMCOMPUTER TO KEY SERVICE UNIT AVAILABLE ?
NO
YES
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
25d
SELECT EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
25e
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
25f
2
SEND CHANNEL NUMBER TO KEY SERVICE UNIT
END
3
START
25g
RECEIVE CHANNEL CONNECTION COMPLETION MESSAGE SIGNAL FROM KEY SERVICE UNIT
GUIDANCE MESSAGE
25h
OUTPUT VOICE GUIDANCE MESSAGE
4
START
END
25i
RECEIVE CHANNEL NUMBER IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER FROM KEY SERVICE UNIT
VOICE (DIAL)
25j
OUTPUT VOICE SIGNAL TO SPEECH RECOGNITION BOARD
25k
5
SEND RECOGNIZED DIAL NUMBER TO KEY SERVICE UNIT
END

FIG. 32B

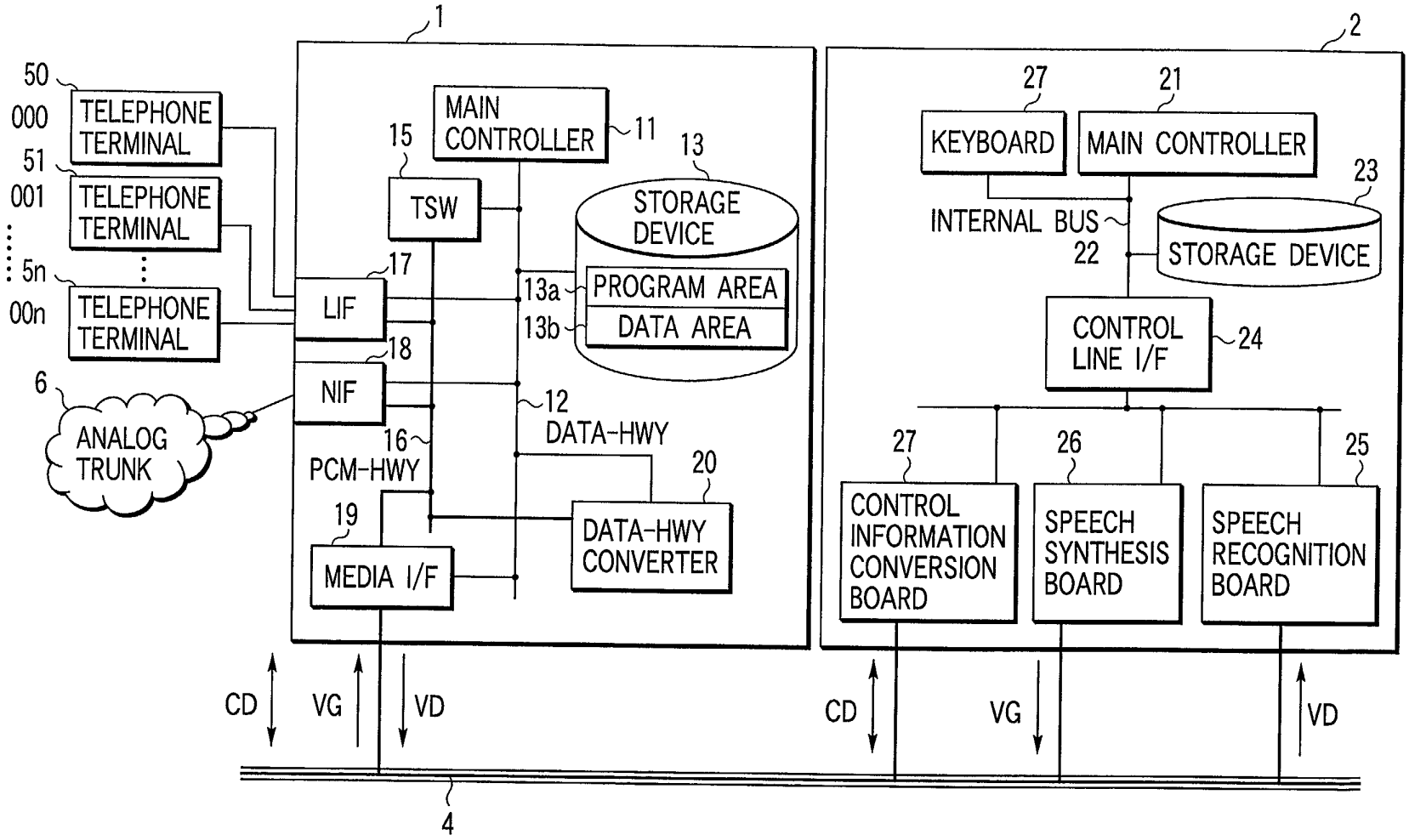
1
2
50
000
TELEPHONE TERMINAL
51
001
TELEPHONE TERMINAL
5n
00n
TELEPHONE TERMINAL
6
ANALOG TRUNK
MAIN CONTROLLER
11
15
TSW
13
STORAGE DEVICE
PROGRAM AREA
DATA AREA
13a
13b
17
LIF
18
NIF
12
DATA-HWY
16
PCM-HWY
20
DATA-HWY CONVERTER
19
MEDIA I/F
CD
VG
VD
4
27
KEYBOARD
21
MAIN CONTROLLER
23
INTERNAL BUS
22
STORAGE DEVICE
CONTROL LINE I/F
24
27
CONTROL INFORMATION CONVERSION BOARD
26
SPEECH SYNTHESIS BOARD
25
SPEECH RECOGNITION BOARD
CD
VG
VD

FIG. 33

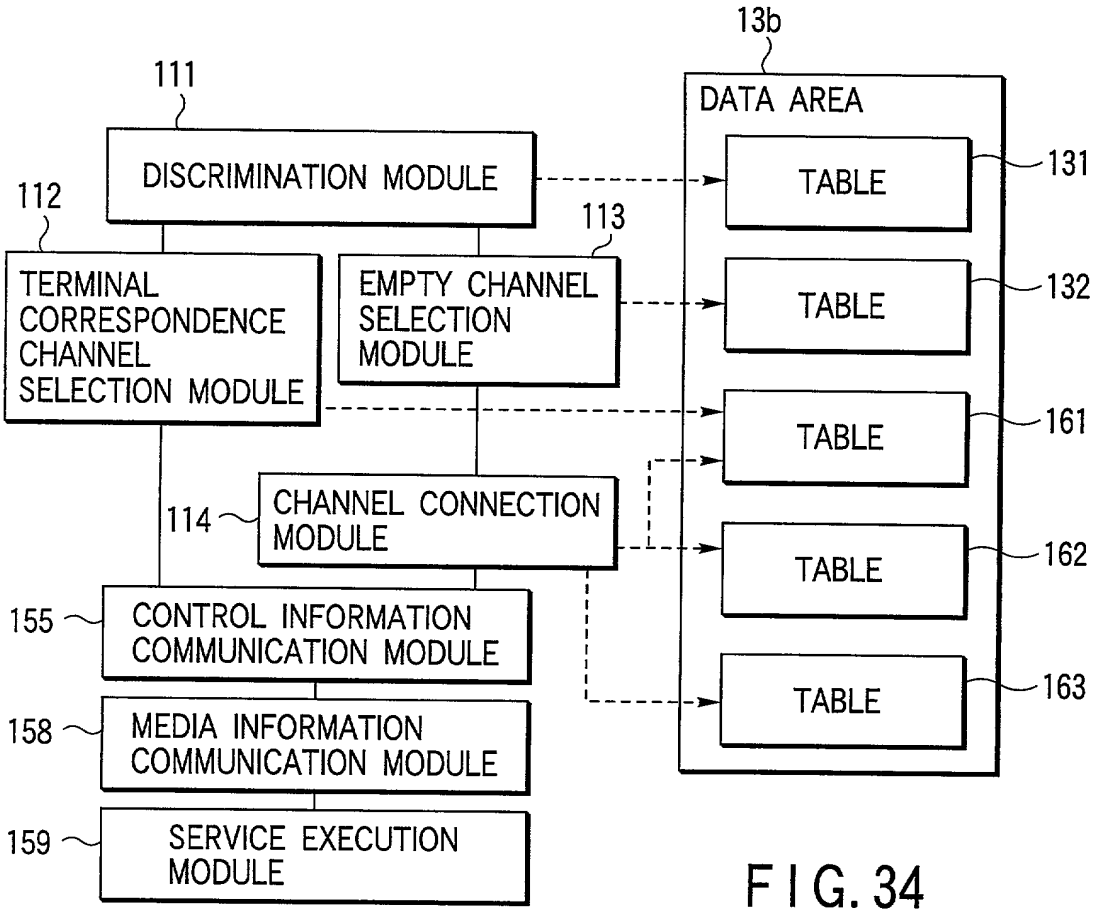
13b
DATA AREA
111
DISCRIMINATION MODULE
112
TERMINAL CORRESPONDENCE CHANNEL SELECTION MODULE
113
EMPTY CHANNEL SELECTION MODULE
114
CHANNEL CONNECTION MODULE
155
CONTROL INFORMATION COMMUNICATION MODULE
158
MEDIA INFORMATION COMMUNICATION MODULE
159
SERVICE EXECUTION MODULE
TABLE
131
TABLE
132
TABLE
161
TABLE
162
TABLE
163

FIG. 34

TERMINAL CORRESPONDENCE TABLE

TERMINAL 000	MEDIA BUS LOGICAL CHANNEL	010
TERMINAL 001		011
TERMINAL 002		012
TERMINAL 00n		XXX

FIG. 35

DATA HIGHWAY CORRESPONDANCE TABLE

DHWY		015

FIG. 36

162

MEDIA BUS LOGICAL CHANNEL NUMBER		
000	TIME SWITCH OUTPUT CHANNEL NUMBER	
001		
010	TIME SWITCH OUTPUT CHANNEL NUMBER	700
011		701
012		702
015		705
XXX		n

FIG. 37

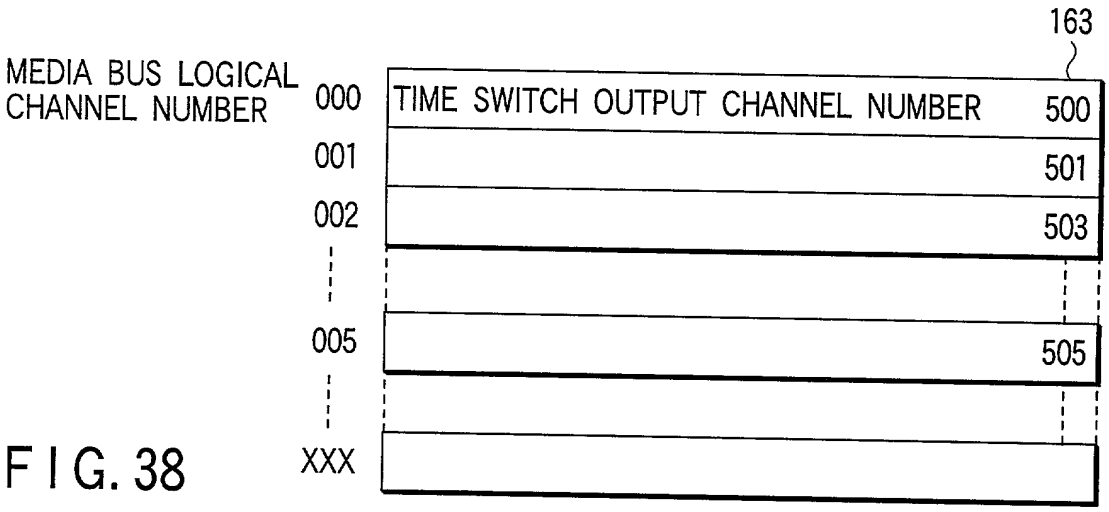
163
MEDIA BUS LOGICAL CHANNEL NUMBER
000
001
002
005
XXX
TIME SWITCH OUTPUT CHANNEL NUMBER
500
501
503
505

FIG. 38

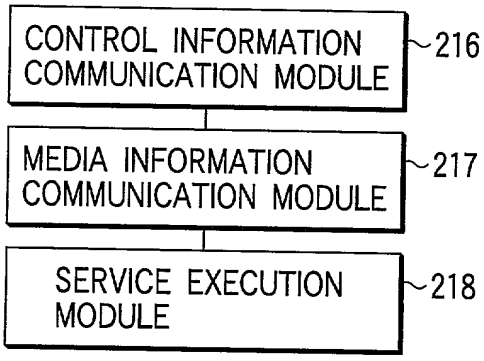
CONTROL INFORMATION COMMUNICATION MODULE
216
MEDIA INFORMATION COMMUNICATION MODULE
217
SERVICE EXECUTION MODULE
218

FIG. 39

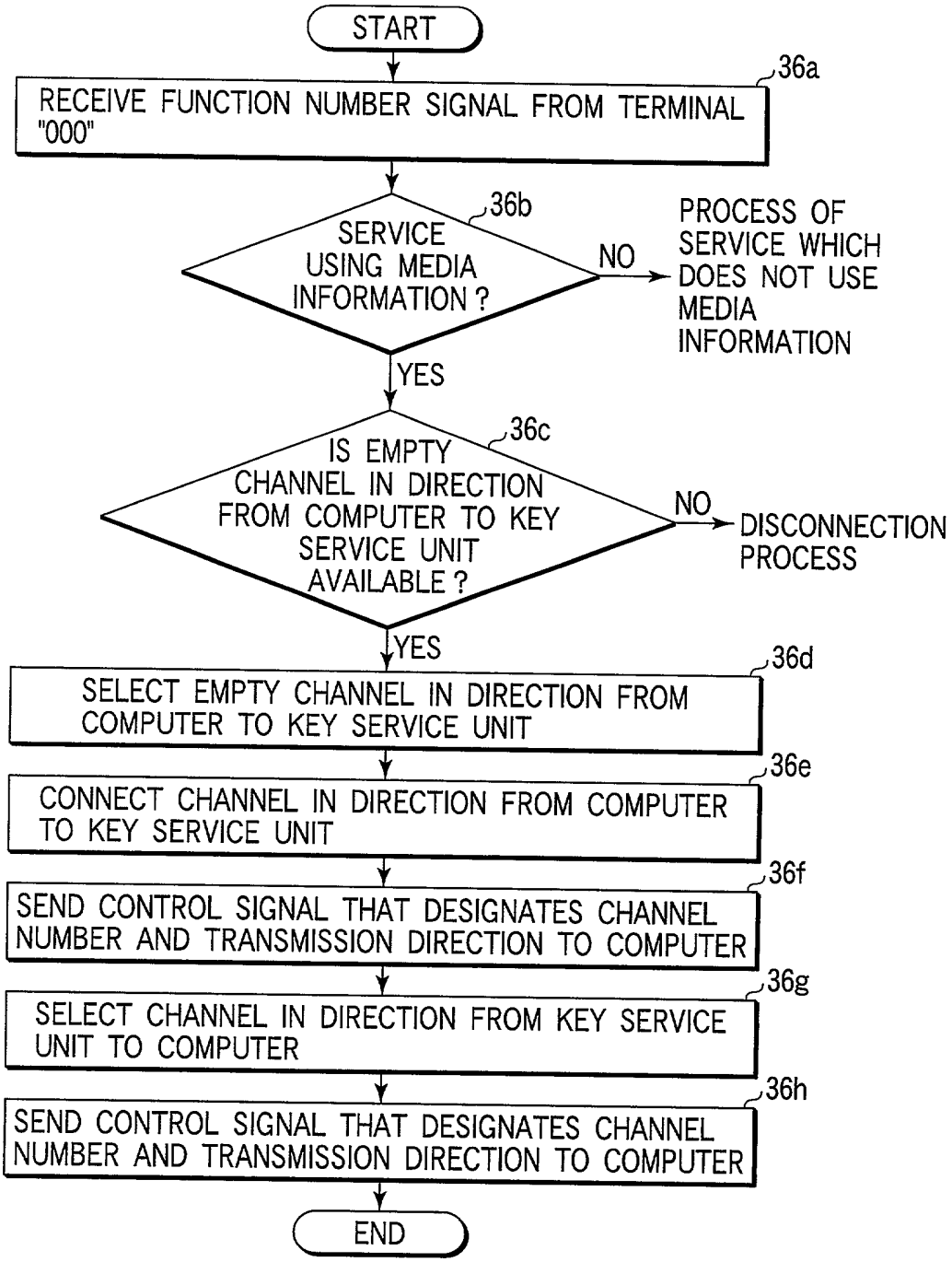
START
RECEIVE FUNCTION NUMBER SIGNAL FROM TERMINAL "000"
36a
SERVICE USING MEDIA INFORMATION ?
36b
NO
PROCESS OF SERVICE WHICH DOES NOT USE MEDIA INFORMATION
YES
IS EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT AVAILABLE ?
36c
NO
DISCONNECTION PROCESS
YES
SELECT EMPTY CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
36d
CONNECT CHANNEL IN DIRECTION FROM COMPUTER TO KEY SERVICE UNIT
36e
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
36f
SELECT CHANNEL IN DIRECTION FROM KEY SERVICE UNIT TO COMPUTER
36g
SEND CONTROL SIGNAL THAT DESIGNATES CHANNEL NUMBER AND TRANSMISSION DIRECTION TO COMPUTER
36h
END

FIG. 40

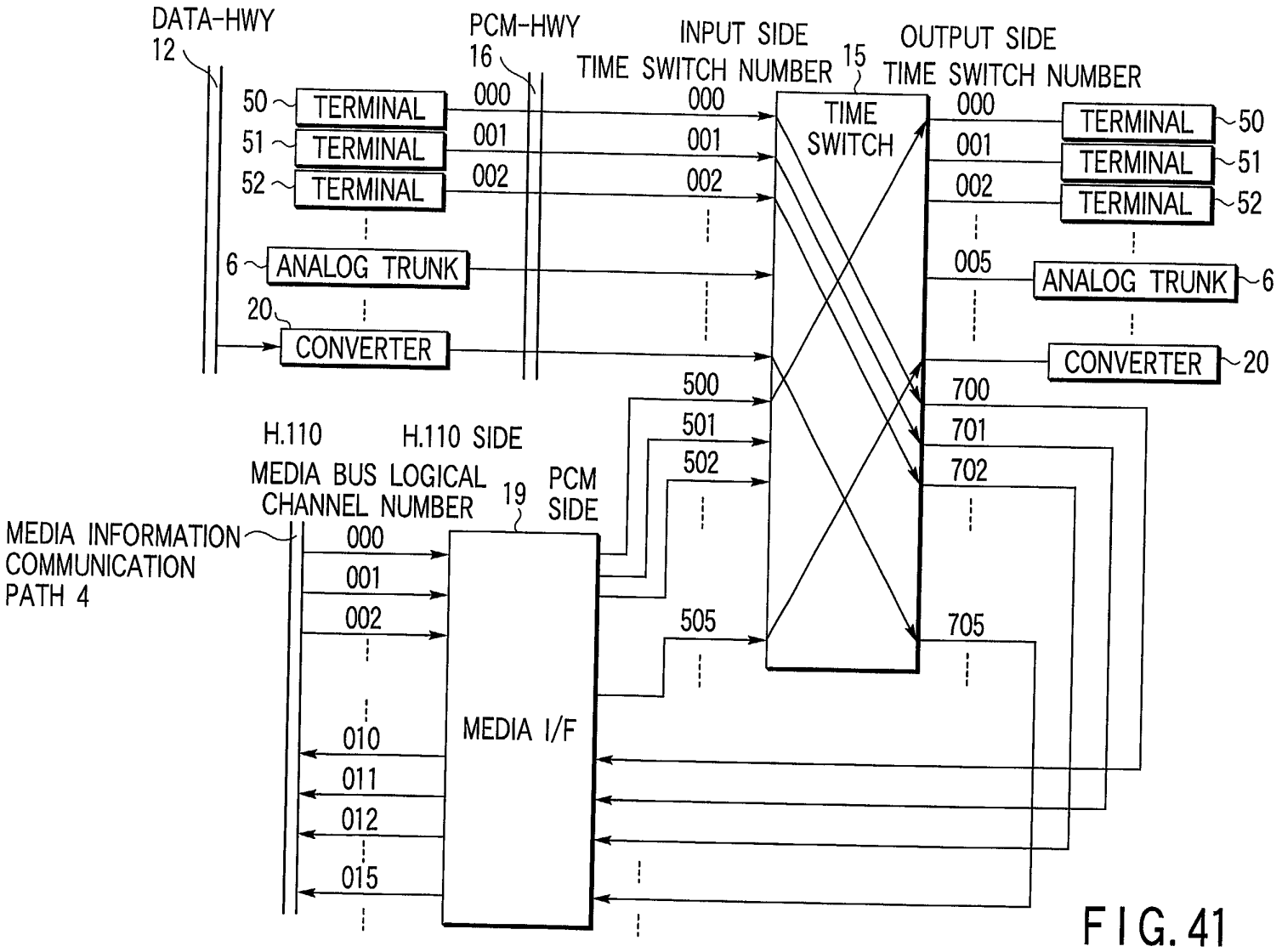
DATA-HWY
12
PCM-HWY
16
INPUT SIDE
TIME SWITCH NUMBER
15
OUTPUT SIDE
TIME SWITCH NUMBER
50
TERMINAL
51
TERMINAL
52
TERMINAL
6
ANALOG TRUNK
20
CONVERTER
000
001
002
TIME
SWITCH
005
500
501
502
505
700
701
702
705
H.110
H.110 SIDE
MEDIA BUS LOGICAL
CHANNEL NUMBER
19
PCM
SIDE
MEDIA INFORMATION
COMMUNICATION
PATH 4
010
011
012
015
MEDIA I/F

FIG. 41